
THE PLUG POWER GAME PLAN

September 1999

FUEL CELLS
FOR THE RESIDENTIAL MARKET



A Residential Fuel Cell . . .



- Generates electricity to power an entire home
- Is the size of a refrigerator
- Uses natural gas
- Can also provide heat and hot water
- Is unaffected by ice storms, lightning strikes, and severe winds

. . . And generates electricity for less than what it costs today!

About Fuel Cells



Efficient

- Higher conversion efficiency than a central generation station . . . (>40% vs. <35%)

Cleaner

- No combustion by-products

Versatile

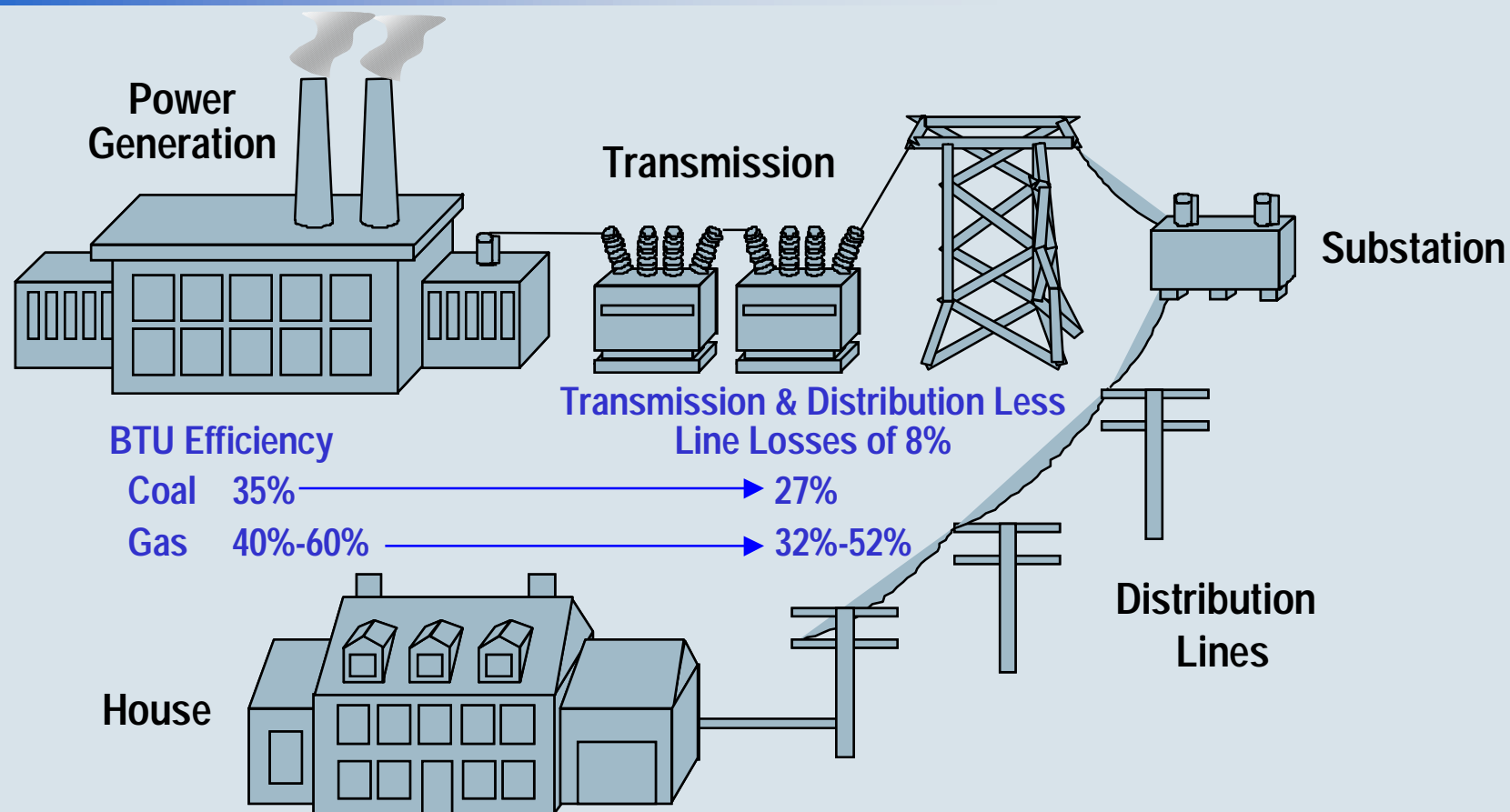
- Operates on natural gas, propane, methanol, gasoline, et al

Economical

- Lower cost alternative to central station plant and grid transmission

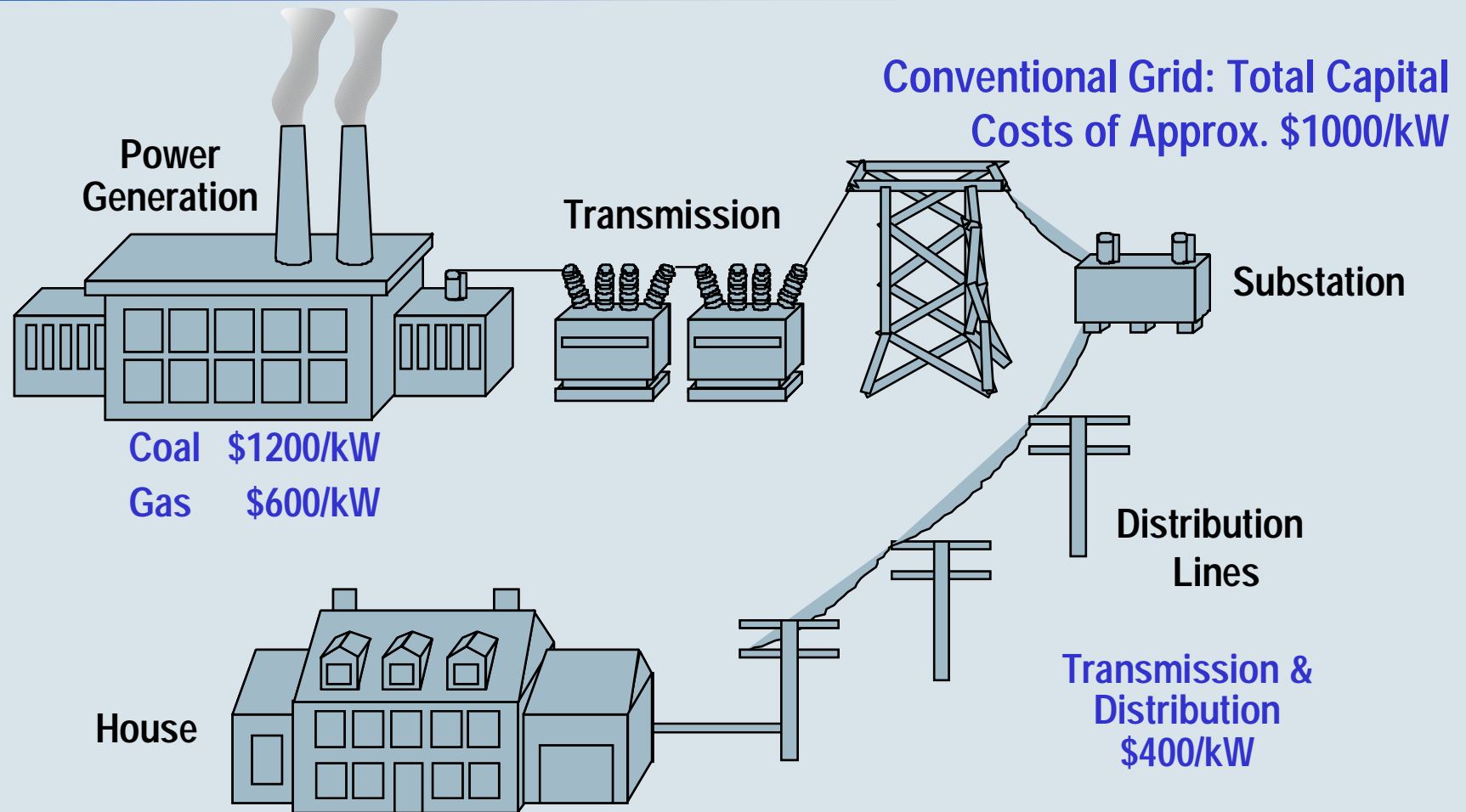
Fuel cell technology is inherently superior

Efficiency of Conventional Grid



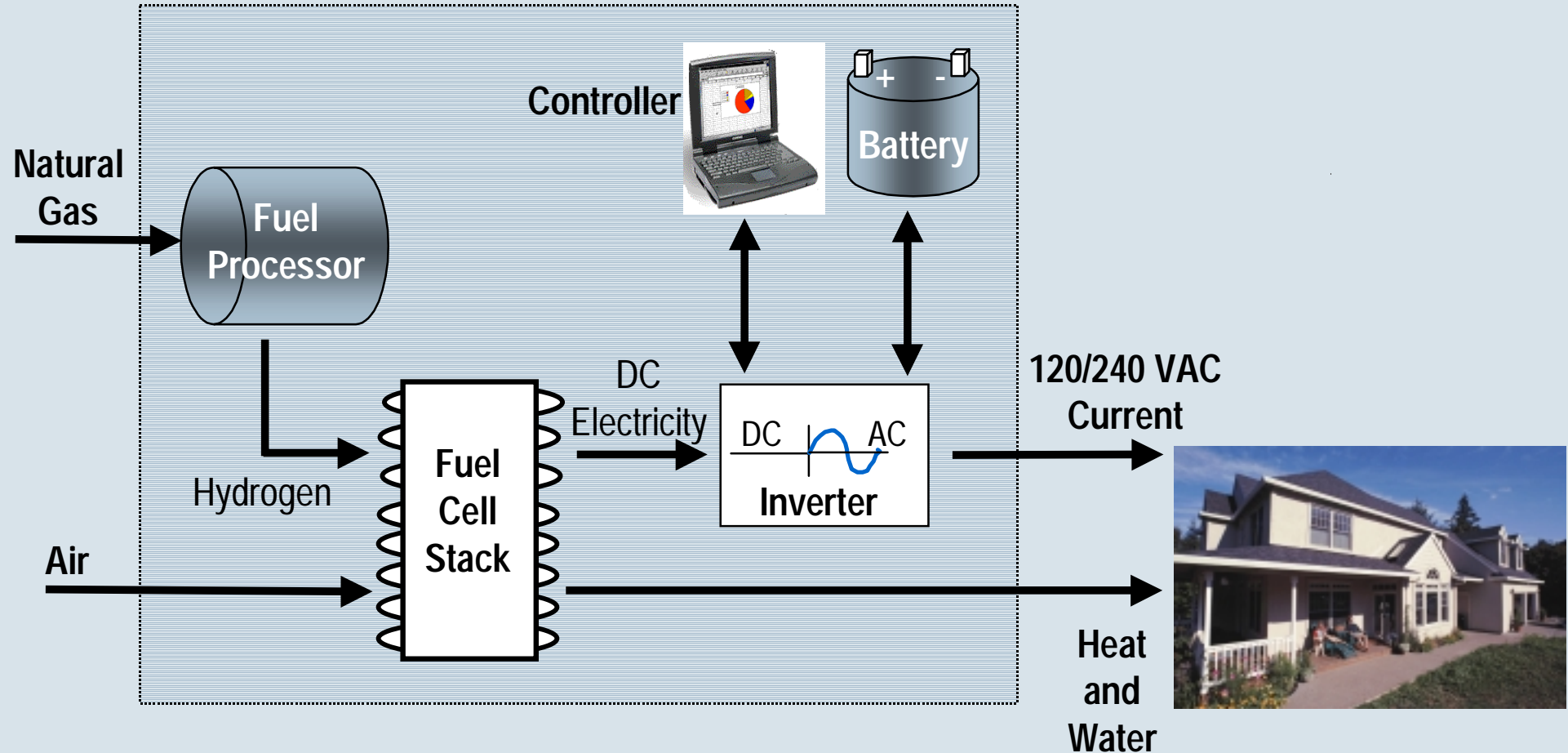
Fuel cell initial target is 40% efficiency on electricity only - recovery of waste heat will increase efficiency.

Build-Out Costs: Conventional Grid

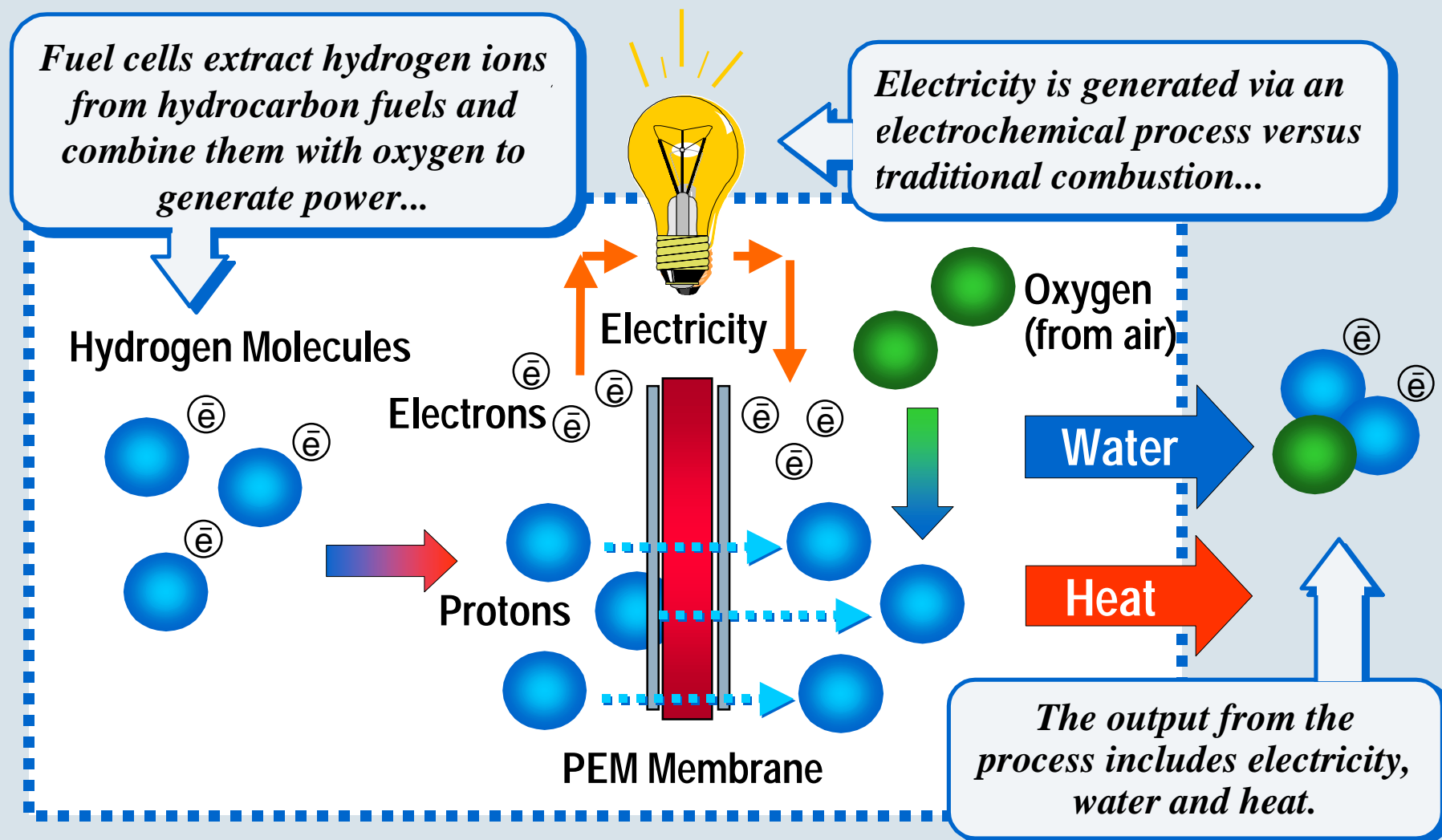


Fuel cell cost targets at \$500/kW - \$1000/kW

Residential System



How Fuel Cells Work



A Well-known Technology



Established

➤ Discovered in 1839

Proven

➤ Used extensively by NASA

Versatile

➤ Can be used in numerous applications

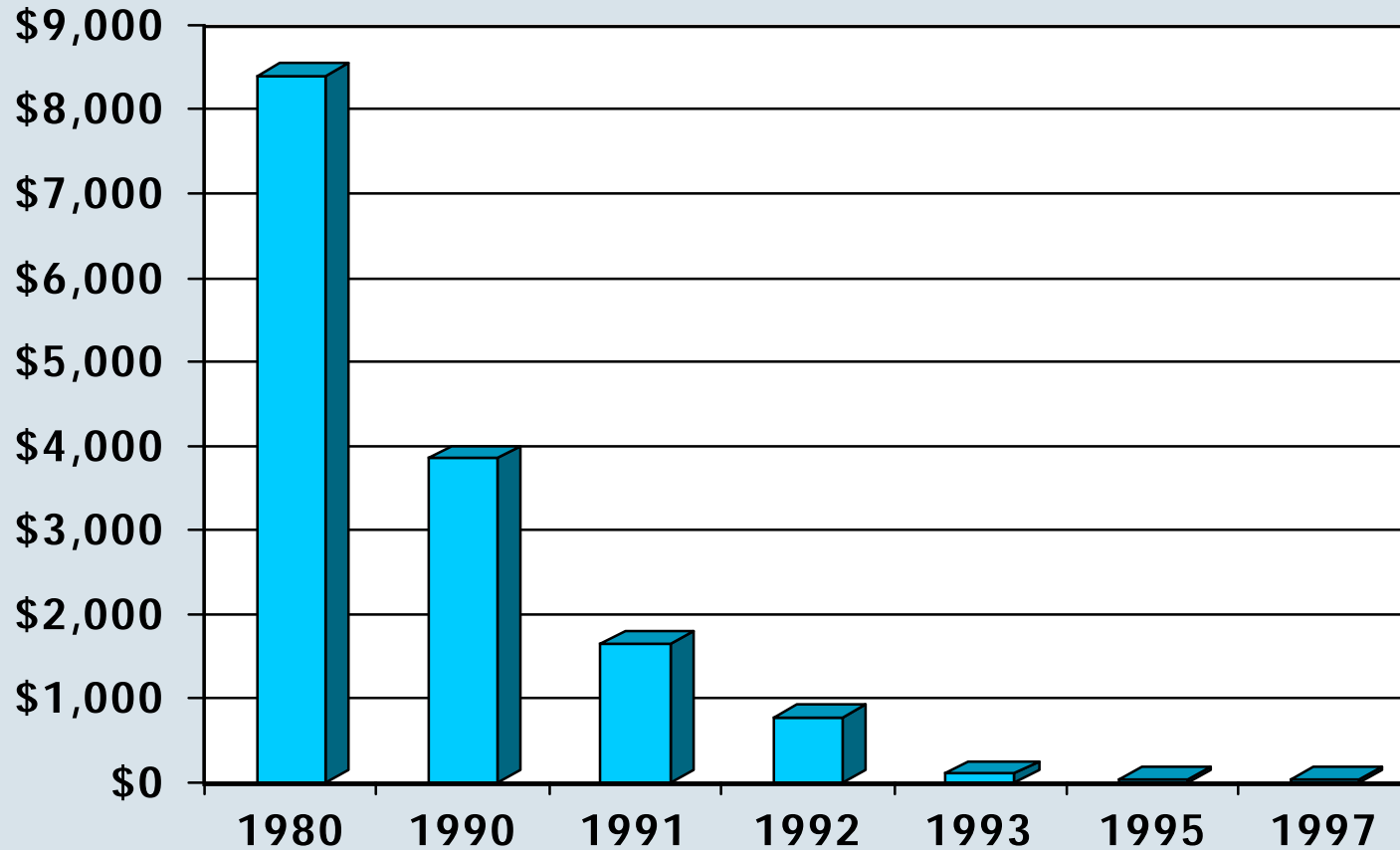
Far-Reaching

➤ Market potential for fuel cells is huge

The Magic Is Out of the Bag

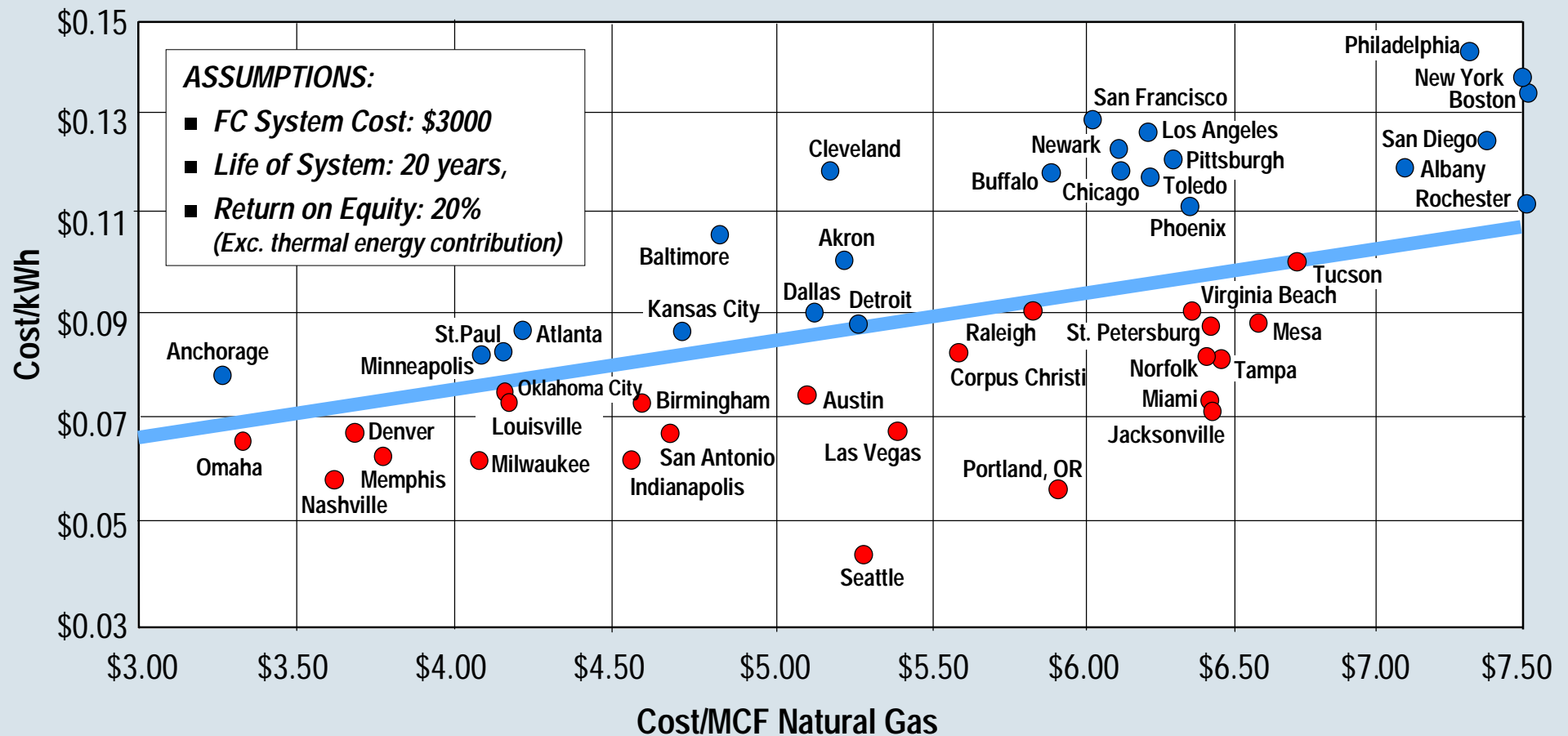


Platinum Cost (per 7 kW unit)



Reduced platinum loading and improved performance reduce cost

U.S. Market... 25 Million Houses



Fuel cell systems will be competitive in numerous areas

European Market Size



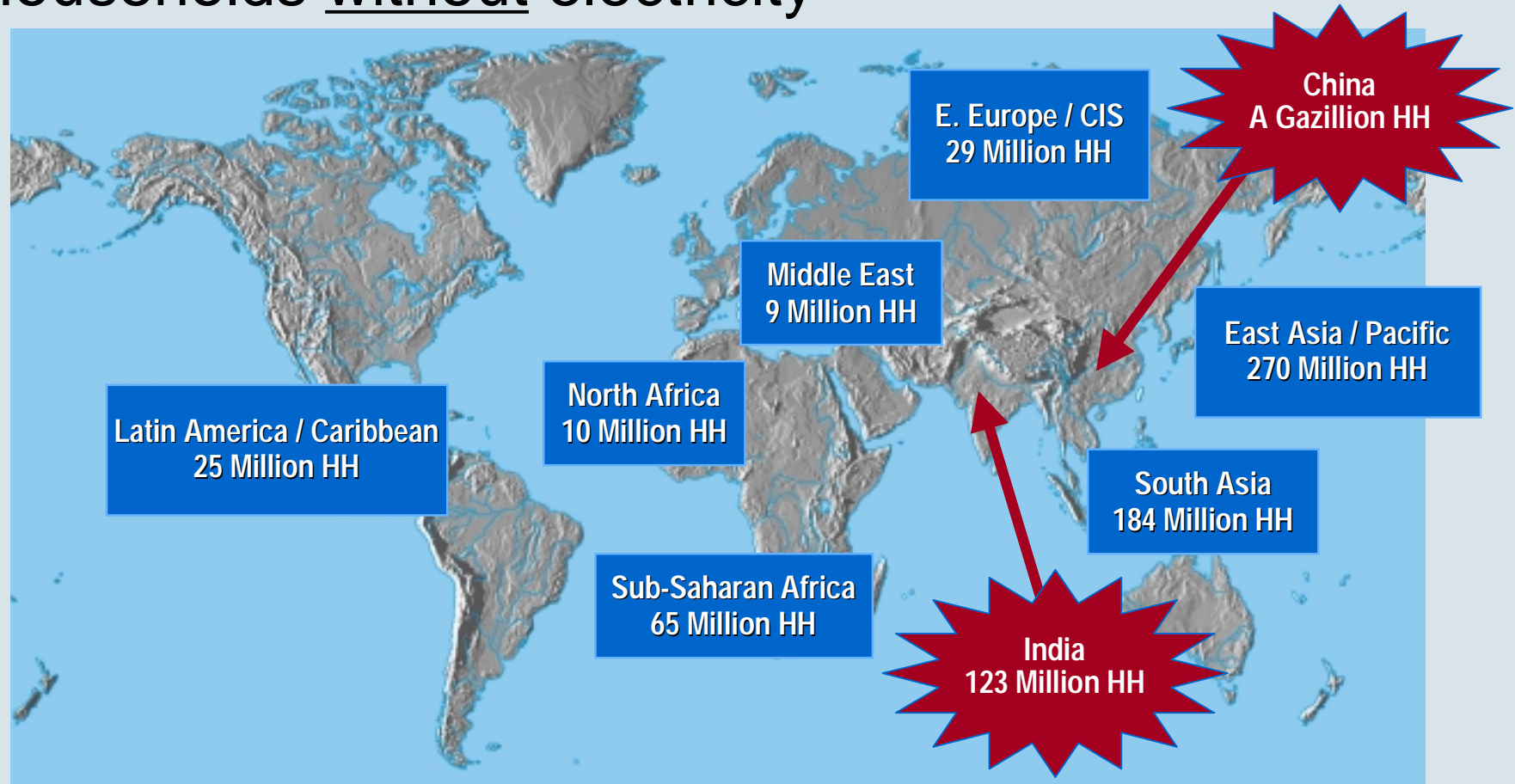
Country	Households (Million)	1997 Grid Cost (¢/kWh)	Fuel Cell NG Cost (¢/kWh)	Spread (¢/kWh)
Belgium	4.0	19.1	10.0	9.1
Austria	3.1	19.2	10.3	8.9
Germany	36.4	18.0	9.7	8.3
Netherlands	6.4	14.8	8.0	6.8
France	22.8	16.4	10.4	6.0
Spain	12.0	19.1	13.5	5.6
UK	24.3	12.5	7.2	5.3

*High electric rates & strong environmental concern
make fuel cells an attractive option in Europe*

Global Market Size

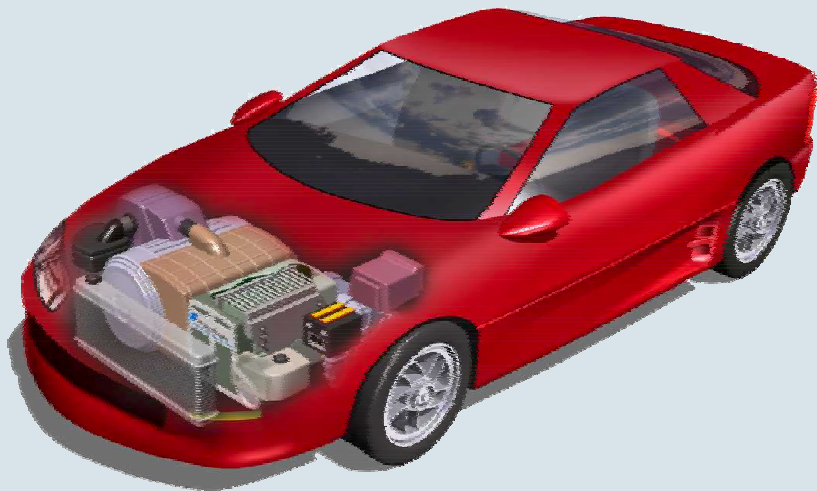


Households without electricity



Developing regions have huge potential

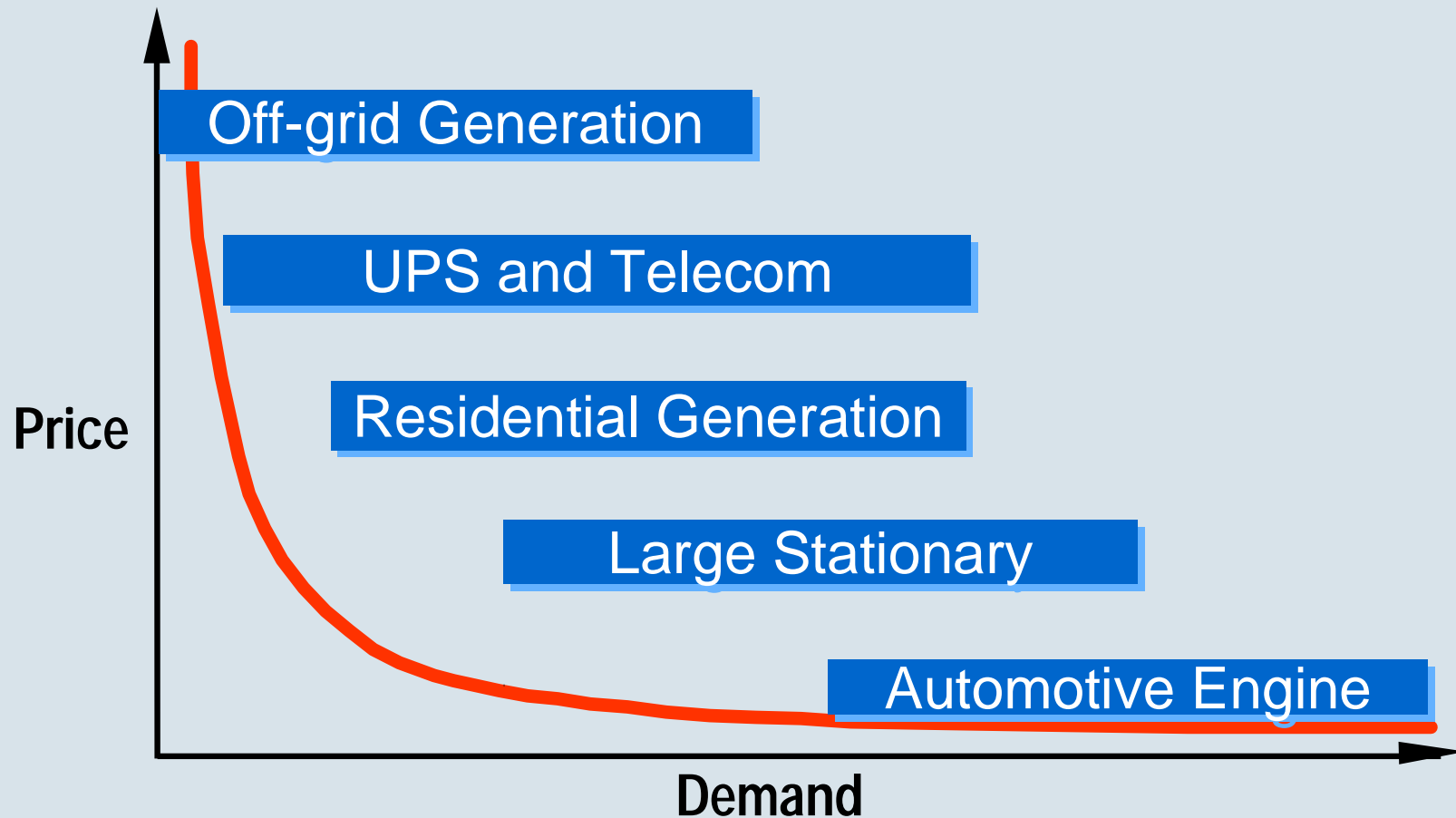
Automotive Requirements



- \$50 - \$100 per kilowatt cost target
- Small in size
- Lightweight
- Shock resistant
- Quick start-up and response times
- Freezing temperature resistant

Mass production of automotive fuel cells 6 - 10 years away!

Road to Market Penetration



Fuel cells have the potential to penetrate broad markets

About Plug Power



- Plug Power – founded in June, 1997 as 50/50 JV between DTE Energy and MTI
- Formed GE Fuel Cell Systems in February 1999 as a JV between Plug Power and GE
- DTE Energy – Parent company of Detroit Edison, Michigan's largest electric utility - serves >5 million people
- MTI – Leading technology developer with over 7 years of fuel cell development experience

Plug Power is a large U.S.-based PEM fuel cell company with over 260 employees

1997 Milestones



June

**DTE and MTI form a new joint venture --
Plug Power with 22 employees**

July

**U.S. Department of Energy Program for
Research & Development award of \$15
million received**

October

**Plug Power converts gasoline to
electricity with ADL / EPYX, DOE and Los
Alamos National Laboratory**



1998 Milestones



January

\$1 million grant from Empire State Development Corporation announced

February

**Plug Power and Los Alamos National Laboratory establish CRADA
(Cooperative Research and Development Agreement)**

May

**The National Energy Resources Organization awards Plug Power R & D
Innovation Award**

June

Plug Power unveils world's first fuel cell powered house

August

MTI / DTE second round financing

September

**Plug Power delivers fuel cell system to Sandia National Laboratories for DOE -
sponsored evaluation program**

October

\$9.8 million NIST award to develop next generation MEA

November

Plug Power demonstrates fuel cell system running on methanol

December

Plug Power successful demonstration of natural gas-based fuel cell systems

December

**Plug Power receives \$6 million award from New York State Energy Research &
Development Authority**

Year - End

Plug Power head count rises to 140 employees

1999 Milestones



January

Plug Power demonstrates Ford/DOE automotive system

February

GE Fuel Cell Systems joint venture formed

March

U.S. Department of Energy announces multi-million dollar award to Plug Power for two research & development programs

March

Long Island Power Authority makes multi-million dollar purchase of Plug Power test & evaluation units

April

SoCalGas invests in Plug Power

April

GE Fuel Cell Systems signs MOU with NJR

May

Plug Power runs high efficiency / low emission fuel cell system on gasoline

June

Plug Power breaks ground for 50,000 ft² manufacturing facility

June

GE Fuel Cell systems signs MOU with Flint Energies



Pathway to the Market



GE Fuel Cell Systems will exclusively distribute, install and service Plug Power residential and small commercial fuel cell systems on a worldwide basis



MASSIVE EXISTING NETWORK

GE has the largest global sales & service network in the power systems industry with 130 sales & engineering offices

NAME RECOGNITION

GE - Plug Power co-branding

**MULTI-TIER
DISTRIBUTION**

Local gas distributors, HVAC, energy service companies, electric utilities, retailers will sell directly to end user

GE brand provides significant customer recognition

Mission Statement



***Plug Power's goal is
to be the first company
to make and sell
one million fuel
cell systems.***